

In the claims

1. (currently and once amended) A polycation composition comprising:

a) a polysaccharide chain having an amount of saccharide ~~units~~ ranging from 2 to 2000

saccharide units;

b) at least one oligoamine ~~directly~~ grafted covalently to said polysaccharide chain per each segment of 5 saccharide units, wherein said oligoamine is ~~selected from the group consisting of~~ a linear, branched ~~and~~ or cyclic alkyl amine having at least two amino groups; and

c) at least one further grafted group ~~selected from the group consisting of~~ which is either a hydrophobic group ~~and~~ or an amphiphilic group ~~directly~~ grafted covalently to said polysaccharide chain per each segment of 50 saccharide units, wherein said hydrophobic group or amphiphilic group includes an aliphatic chain of at least 4 ~~earbons~~ carbon atoms.

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2. (currently and once amended) A biodegradable polycation complex with a polyanion comprising:

a) a polysaccharide chain having an amount of saccharide ~~units~~ ranging from 2 to 2000

saccharide units;

b) at least one oligoamine ~~directly~~ grafted covalently to said polysaccharide chain per each segment of 5 saccharide units, wherein said oligoamine is ~~selected from the group consisting of~~ a linear, branched ~~and~~ or cyclic alkyl amine having at least two amino groups; and

c) at least one further grafted group ~~selected from the group consisting of~~ which is either a hydrophobic group ~~and~~ or an amphiphilic group ~~directly~~ grafted covalently to said polysaccharide chain per each segment of 50 saccharide units, wherein said hydrophobic or

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amphiphilic group includes an aliphatic chain of at least 4 ~~earbons~~ carbon atoms; and complexed with

d) wherein the hydrophobic or amphiphilic group is complexed with an anionic macromolecule selected from the group consisting of polynucleic acids, proteins and polysaccharides that are anionic.

3. (original) A biodegradable polycation composition according to claim 2, wherein said anionic macromolecule is selected from the group consisting of a plasmid, an open chain polynucleic acid, an oligonucleotide, an antisense, a peptide, a protein, a polysaccharide and combinations thereof.

4. (original) A biodegradable polycation composition according to claim 1, wherein said polysaccharide chain is selected from the group consisting of dextrans, arabinogalactan, pullulan, cellulose, cellobios, inulin, chitosan, alginates and hyaluronic acid.

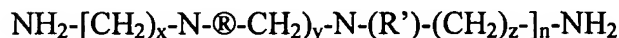
5. (currently and once amended) A biodegradable polycation composition according to claim 1, wherein said saccharide units are connected by a bond selected from the group consisting of acetal, hemiacetal, ketal, orthoester, amide, ester, carbonate and carbamate bonds.

6. (original) A biodegradable polycation composition according to claim 1, wherein said polysaccharide is a synthetic polysaccharide formed from the condensation of an aldarcic acid and a diaminoalkane.

7. (original) A biodegradable polycation composition according to claim 1, wherein said grafted oligoamine is grafted to said polysaccharide chain by a bond selected from the group consisting of an amine bond, an imine bond, an amide bond and a carbamate bond.

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8. (currently and once amended) A biodegradable polycation composition according to claim 1, wherein said oligoamine has the formula:



wherein x, y, z are an integer between 0 and 4 and $x+y+z+$ is between 1 and 4 and n is at least 1 when $x+y+z=2$ or more, or at least 2 when $x+y+z=1$ and wherein R and R' groups are H or an aliphatic side group of 1 to 6 carbons.

9. (original) A biodegradable polycation composition according to claim 1, wherein said oligoamine is a peptide of up to 20 amino acids with at least 50% of the amino acid are cationic including lysine, ornithine, and arginine.

10. (currently and once amended) A biodegradable polycation composition according to claim 1, wherein said oligoamine is selected from the group consisting of spermine and modified spermine derivatives thereof.

11. (currently and once amended) A biodegradable polycation composition according to claim 1, wherein said oligoamine is ~~selected from the group consisting of~~ a linear and or branched ethyleneimine oligomer having up to 10 ethylene imine units.

12. (currently and once amended) A biodegradable polycation composition according to claim 1, having an amphiphilic residue wherein said amphiphilic residue is selected from the group consisting of fatty chains, phospholipids, ~~cholesterol derivatives~~ cholesterols, ethylene glycol oligomers, propylene glycol oligomers and combinations thereof.

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13. (original) A biodegradable polycation composition according to claim 12, wherein said ethylene and propylene glycol oligomers have a fatty chain block on one side.

14. (currently and once amended) A biodegradable polycation composition according to claim 12, wherein said amphiphilic residue is connected to said polysaccharide chain by a bond selected from the group consisting of an amine, amide, imine, ester, ether, urea, carbamate and carbonate bonds.

15. (original) A biodegradable polycation composition according to claim 12, wherein said amphiphilic residue is an oleic chain.

16. (original) A biodegradable polycation composition according to claim 12, wherein said amphiphilic residue facilitates the crossing of the polycation through biological membranes.

17. (original) A biodegradable polycation composition according to claim 1, wherein said polycation composition is not toxic or immunogenic.

18. (currently and once amended) A biodegradable polycation composition according to claim 1, wherein said composition further comprises a ligand for facilitating the binding of said composition to a ~~predetermined type of~~ cell or tissue.

19. (original) A biodegradable composition according to claims 1 ~~and~~ or 2, in combination with cationic and nonionic lipids or polymers for enhanced cell transfection.

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20. (original) A biodegradable composition according to claims 1 and 2, wherein polycation has a structure selected from the group consisting of a comb-like chain, a branched chain and a cross-linked chain.

21. (original) A pharmaceutical composition, comprising the composition of claim 2, in combination with a pharmaceutically acceptable carrier.

22. (original) A pharmaceutical composition of claim 21, in combination with a biodegradable polymer matrix or capsule for controlled, timed and extended delivery of the complex.

23. (currently and once amended) A scaffold for cell growth comprising a A polycation composition according to claim 1,~~wherein used as a scaffold for cell growth.~~

24. (currently and once amended) A coating composition used in printing or electronic industry comprising the polycation composition according to claim 1,~~wherein said composition is used in non-medical coatings in the printing and electronic industry.~~

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24. (currently and once amended) A coating composition used in printing or electronic industry comprising the polycation composition according to claim 1, wherein said composition is used in non-medical coatings in the printing and electronic industry comprising

a) a polysaccharide chain having an amount of saccharide units ranging from 2 to 2000 saccharide units;

b) at least one oligoamine grafted covalently to said polysaccharide chain per each segment of 5 saccharide units, wherein said oligoamine is a linear, branched or cyclic alkyl amine having at least two amino groups; and

c) at least one further grafted group which is either a hydrophobic group or an amphiphilic group grafted covalently to said polysaccharide chain per each segment of 50 saccharide units, wherein said hydrophobic group or amphiphilic group includes an aliphatic chain of at least 4 carbon atoms.